Analysis of Shortest Path Routing for Large Multi-Hop Wireless Networks

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Abstract

In the concurrent system, each node avails as a packet over the network depends on the length of the node. The length of the node generated through straight line routing algorithm. The cost of routing depends on the shortest path routing algorithm. The shortest path is determined by the cost of a distance from one node to another over the network. The capacity of a network is balanced and maintained by the straight routing. The traffic and cost is balanced over the network by using the algorithms.

Keywords: *Use about five key words or phrases in alphabetical order, Separated by Semicolon.*

1. Introduction

The technology of multi-hop wireless network is connected automatically over the network. It avoids congestion through the nodes. The multiple hops are connected over the network and also it provides reliability, robustness, load balancing, control traffic and also maintain low cost. As it has these key features, it servers a better service throughout the large multi-hop networks without connected through wire.

2. Existing System

A dust mote is a sensor node communication with other nodes to collect information about the nodes over the wireless network. The dust motes can be reaching to any environment to gather and observe the data. The distance travel between nodes from 10s to 1000s.It is a bi-directional wireless communication technology used for large networks and it is also very stiff to detect the dust after the deployment.

3. Proposed System

We examine the conflict of straight line routing in large harmonized multi-hop wireless sensor networks. The estimation of the load, which has the number of packets, determines the straight line routing. The length of the node decides the number of straight lines for routing. Shortest path has identified by the low cost of routing between the nodes in a hop. The analysis says that the congestion control, stability of pack and cost can be managed even for high transmission of data packets.

4. Module Description

4.1 Networking Module
4.2 Shortest Path Module
4.3 Straight Line Routing Module
4.4 Multihop Module

4.1 Networking Module

The source and destination communication .The source will act as a client to request a service and destination will act as a server to respond to a request. The resources will be shared among the source and destination. The communication is initiated by the client and preceded among client and server. The network interface card is installed with a router for a better performance.

4.2 Shortest Path Module

In multi-hop wireless sensor networks, packets are transferred in the course of routes in a multiple nodes between sources and destinations. The shortest path routing focused on straight line routing and shortest path routing. The distance between the nodes connected in a network will determine the shortest path based on the cost for routing from one node to another. As multi-hop network cost differ from routing of one hop to another. The straight line routing provides the load balancing and avoids traffic over the network. Thus; it results in high performance with reliability, avoid congestion and low cost for transmitting packets from source to destination among any environment.

4.3 Straight Line Routing Module

The analysis of straight line routing defines that the load of node depends on the traffic among nodes over the network. The traffic
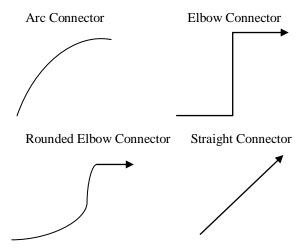
can be identified among the distributed networks. The algorithm is mainly focused in load balancing and to avoid traffic through wireless communication. The analysis of other algorithm fails to challenge the traffic of routing. The routes are divided evenly according to the length. For example, if there are two routes with different length, it will be divided into two sections. For each section two straight lines will be provided with measurement of length between nodes. Each straight line will have certain measurement of length. According to the length it determines the number of straight lines.

4.4 Mulithop Module

Multi-hop wireless network comprises number of intermediate nodes. There is large number of nodes connected to the network with limited capacity. Since it is a sensor wireless network load balancing is perfectly maintained by using straight lines among the network through specified length between the nodes that are connected for routing. The congestion over the network will be reduced and provides reliability by using the algorithm. The shortest path routing itself will reduce the cost by finding the shortest distance between the nodes. Shortest path will be identified by the cost of routing among the wireless networks. Hence, it consequences in capacity of load balancing and cost efficient.

Fig.1.Workflow Connectors

ARC (Audio Return Channel) is an HDMI quality, built into many Television, receivers, and noise bars. It has the prospective to make straightforward system, but it comes at a prospective cost. A connector is line that connects two edges and connected to the edges.

Arc Connector   Elbow Connector

Rounded Elbow Connector   Straight Connector

5. Algorithms

5.1 Straight Line Routing Algorithm
5.2 Shortest Path Routing Algorithm

5.1 Straight Line Routing Algorithm

The diagrammatic representation of straight line routing algorithm denotes, the capacity of node will be easily maintained and it depends on the length of routing between nodes. Length will determine the number of lines for routing between nodes in a sensor network. A straight line that connect two edges. The packet will contain the load of the particular node. Distance can be measured to analyze the number of straight lines needed for the entire network. As a sensor network can travel among buildings and other environment. In diagram, seven edges connected with seven separate straight lines including the source and destination.
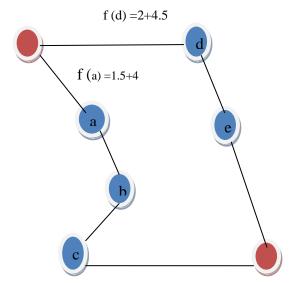

$f(d) = 2 + 4.5$

$f(a) = 1.5 + 4$

Fig. 1. Straight Line Routing

It informs that nodes in a network are connected through straight line and find a distance for each node. The nodes a,b,c,d,e acts as an intermediate nodes for connecting source and destination in a Multi-hop wireless networks.

5.2 Shortest Path Routing Algorithm

Shortest Path can be calculated for weighted graph. The vertices are connected to edges with a number i.e., the weight of the edge. Shortest path is identified with minimum distance by which the data packets transmitted over the internet. The minimum weight of the edge represents the shortest path in a network.
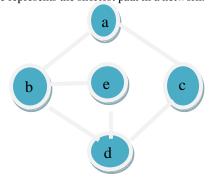

Fig.2 Shortest Path Routing

Path	Cost
a-d	3
b-d	5
d-c	2
c-a	1
b-e	2
e-d	1

Path	Cost
b-d	5
b-e-d	3

Routing from b to d, the possible path is

Here, the above table indicates that there are two possible path is available for routing from b to d.The cost of direct path from b to d is 5.If routing from b to e the cost is 2, then from e to d the cost is 1, totally the cost from b through e to d is 3.Hence the cost is lesser for routing from b to d through e is considered to be a shortest path.

6. Conclusion

In this paper, using straight line routing algorithm and shortest path routing algorithm for multi-hop wireless networks. The performance of straight line routing algorithm depends on the length of the node. The shortest path routing depends on the cost of routing from one node to another. Based on the length and cost of the nodes the both algorithm may have a balanced routing over the network and also avoid traffic throughout the network for multi-hop wireless networks.

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